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TITLE:

OPTICAL FIBER LASER EQUIPMENT

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ABSTRACT:

PURPOSE: To obtain an optical fiber laser device which realizes constantly stable laser operation even with ambient temperature fluctuating and

efficient especially for mode lock operation by a method wherein effective

resonance length of optical fiber laser is specified so that it satisfies a specific equation.

CONSTITUTION: In an optical fiber laser device consisting of a resonator system equipped with a laser oscillation medium made of a single mode optical

fiber core 1 with rare earth elements added and resonating mirrors 2a, 2b which

generate laser resonance, an optical modulator 21 inserted in this resonator

system and a light source 3 for exciting rare earth elements of said oscillation medium 1, effective resonance length L(T) oh said optical fiber

laser is determined so that it satisfies a constant equation, N(T) & times; L(T),

where N(T) refers to a group refractive index of said optical fiber 1, and N(T)

and $L\left(T\right)$ refer to functions of absolute temperature indication T of operating

temperature of said laser device. This maintains optical path length constant

even if ambient temperature fluctuates, thus permitting stable laser operation.

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